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REFERENCES CITED

CHEMSAK, J. A. 1963. Taxonomy and bionomics of the genus *Tetraopes* (Cerambycidae: Coleoptera). Univ. California Publ. Entomol. 30:1-90.

EDGREN, R. A. AND D. W. CALHOUN. 1958. Studies on a mixed population of milkweed beetles. Phenological observations during 1956 and 1957. Bull. Ecol. Soc. Amer. 39:91-2.

ISELY, D. 1920. Grapevine flea beetles. U.S.D.A. Bull. no. 901.

ROBERTSON, C. 1887a. Insect relations of certain asclepiads. I. Bot. Gaz. 12:207-16.

——————. 1887b. Insect relations of certain asclepiads. II. Bot. Gaz. 12:244-50.

——————. 1891. Flowers and insects: Asclepiadaceae to Scrophulariaceae. Trans. St. Louis Acad. Sci. 5:569-98.

WEISS, H. B. AND E. L. DICKERSON. 1921. Notes on milkweed insects in New Jersey. J. New York Entomol. Soc. 29:123-45.

WILCOX, J. A. 1954. Leaf beetles of Ohio (Chrysomelidae: Coleoptera). Ohio Biol. Surv. Bull. 43.

WILLIAMS, R. W. 1941a. Notes on the bionomics of *Tetraopes tetrophthalmus*. Canadian Entomol. 73:137-9.

——————. 1941b. A note on the life cycle of *Tetraopes femoratus*. Psyche 48:169-70.

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LIVE INSECTS PROVE BIG U.S. HIT[1]

Today, live insects are the main attractions in scientific activities from junior high exhibits to complex laboratory experiments. The demand for these creatures in their natural state has prompted "bug" enthusiasts to extend their searches across state lines, and even into foreign countries. What these collectors carry, mail, or have shipped home also happens to be of concern to the U. S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). This agency has the job of keeping hundreds of harmful insects out of this country.

To do this, APHIS not only requires special import permits for incoming bugs, but carefully screens them upon arrival at any of about 80 U.S. ports of entry. Intrastate movement of live insects is also restricted by the agency.

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[1] Adopted from USDA News Release 2453-76.

APHIS supervision covers insects needed for just about all purposes, including the newest phenomenon in entomology—the insect zoo. Such a specialized facility opened recently at the Smithsonian Institution's Museum of Natural History to serve as a permanent home for a variety of exotic and domestic insect species. These living, crawling specimens are on display in specially-built replicas of their own natural habitats.

APHIS' interest in this insect collection is twofold: (1) to restrict entry of known foreign pests, and (2) to insure that permitted insects cannot escape their museum environment to establish in greener U. S. pastures.

Curators for the insect zoo looked abroad for many of their specimens because the larger and more bizarre types are often found in tropical areas. While many are not classed as plant pests, there is still an element of risk in bringing them to the United States.

Such hesitation is well-founded. Past errors in importing and moving insects have brought to this country destructive infestations of gypsy moths, fruit flies, and fire ants, among others. Pest establishment is relatively easy once the insect has escaped. With a ready supply of food, a favorable climate, and no natural predators, they can easily grow to epidemic numbers. Damage and control costs associated with such outbreaks can run into millions of taxpayer dollars each year.

Such devastation prompted the enactment of two Federal laws—the Plant Quarantine Act of 1912 and the Federal Plant Pest Act of 1957—both of which give APHIS authority to restrict importation and interstate movement of live insects.

When evaluating a permit application, the agency weighs the scientific "benefits" of the requested insect against its "risk" as a possible plant pest. Clearance depends on such factors as whether the insect is already a pest, how widespread and mobile it is here, if additional strains will be bred, and how easily an accidental outbreak could be eradicated.

If the insect passes the APHIS checklist—and is okayed by the state to which it's going—an entry permit is issued. Responsibility for complying with permit instructions lies with the collector. He or she must see that labels are clearly visible on incoming insect containers, and that shippers are informed of all APHIS import rules.

APHIS approved special permits for virtually all the Smithsonian zoo's insects. "Foreigners" allowed entry included beetles, spiders, and scorpions obtained from Smithsonian research centers in Panama and Mexico.

Only one species—a tropical termite—was refused, "because it proved an unwarranted risk for which a U. S. substitute could easily be found." For other "high-risk" insects, particularly leaf-eaters like moths, leaf-cutter ants, and plant lice, only males were permitted the first year. In alternating years, female insects are allowed into the country.

In deciding whether to approve permit applications, APHIS also considered just how and where the collection would be displayed. Museum zookeepers sought the agency's advice in making all cages absolutely escape-proof. Plexiglass containers, equipped with several layers of metal and rayon screening on top as well as an anti-stick paint, prevent insects from crawling out.

A big challenge arises during the winter season when many of the insects begin to die off. To replenish short-lived stocks without further expeditions to native haunts, the Smithsonian zoo also features an "insect hatchery."

Because insect rearing is a very risky operation, APHIS also provided requirements for this. The hatchery—located behind the main exhibit through a set of heavy double doors—has been "insect-proofed" with all holes in windows, doors, electrical outlets, and drains tightly sealed against escape.

The problems associated with keeping insects alive and under control have kept insect zoos from the same popularity here that they now enjoy in Europe and Japan. However, the concept is catching on. Several other insect zoos are now planned, and one in Cincinnati is being developed.

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